



About $\frac{1}{4}$ natural size.

SCALY-TAILED OPOSSUM

WYULDA SQUAMICAUDATUS, *gen. et spec. nov.*

From a painting by
G. Pitt Morison.

A NEW SPECIES OF MARSUPIAL OF THE SUB-FAMILY PHALANGERINÆ.

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W.A. Museum.

(Read 9th April, 1918.)

The interesting animal represented in the accompanying plate (Plate I.), which is a reproduction of a most accurate painting by Mr. G. Pitt Morison, was received at the Western Australian Museum in the flesh from the Perth Zoo during the writer's absence in Melbourne. Unfortunately, no measurements or observations were made on the fresh specimen. The skin was mounted for exhibition and the skull preserved.

The authorities of the Zoological Gardens stated that it had been presented to that institution by the Hon. Walter Kingsmill, M.L.C., President of the Zoological and Acclimatisation Board, who had received it from Violet Valley Station, via Wyndham.

The specimen is a female, apparently adult, though from the unworn condition of the teeth it is evidently not an old individual, so that it may not be full grown.

The remarkable tail at once indicated that it was a representative of a species new to science, and after careful consideration it seems necessary to create for it a new genus, since, though it is undoubtedly nearly related both to the Cuscuses (*Phalanger*) and the Australian Opossums (*Trichosurus*), it presents certain features characteristic of each of those genera, whilst its tail is unlike that of either.

For this new marsupial the name of *Wyulda squamicaudata* is proposed. The word "wyulda" is the aboriginal name for the common Australian opossum on the Lyons River, N.W. Australia, and should be pronounced as if spelt in English weecolda. As a vernacular name, Scaly-tailed Opossum is suggested as the most suitable for use in Australia. Those who still refuse to accept the inevitable, and object to the use of the term opossum for any animal not belonging to the family Didelphyidæ, will presumably write of it as the Scaly-tailed Phalanger.*

External characters.

Size comparatively large. Approximate dimensions (measured on the stuffed specimen):—

Head and body—420 mm.

Tail—305 mm.

Hind leg—100 mm.

Hind foot—45 mm.

Ear—26 mm.

* The name bandicoot, originally given to an Indian rodent, is now universally used also for several Australian marsupials. There would seem to be less objection to the use of the name of an American marsupial for an Australian member of the same class.

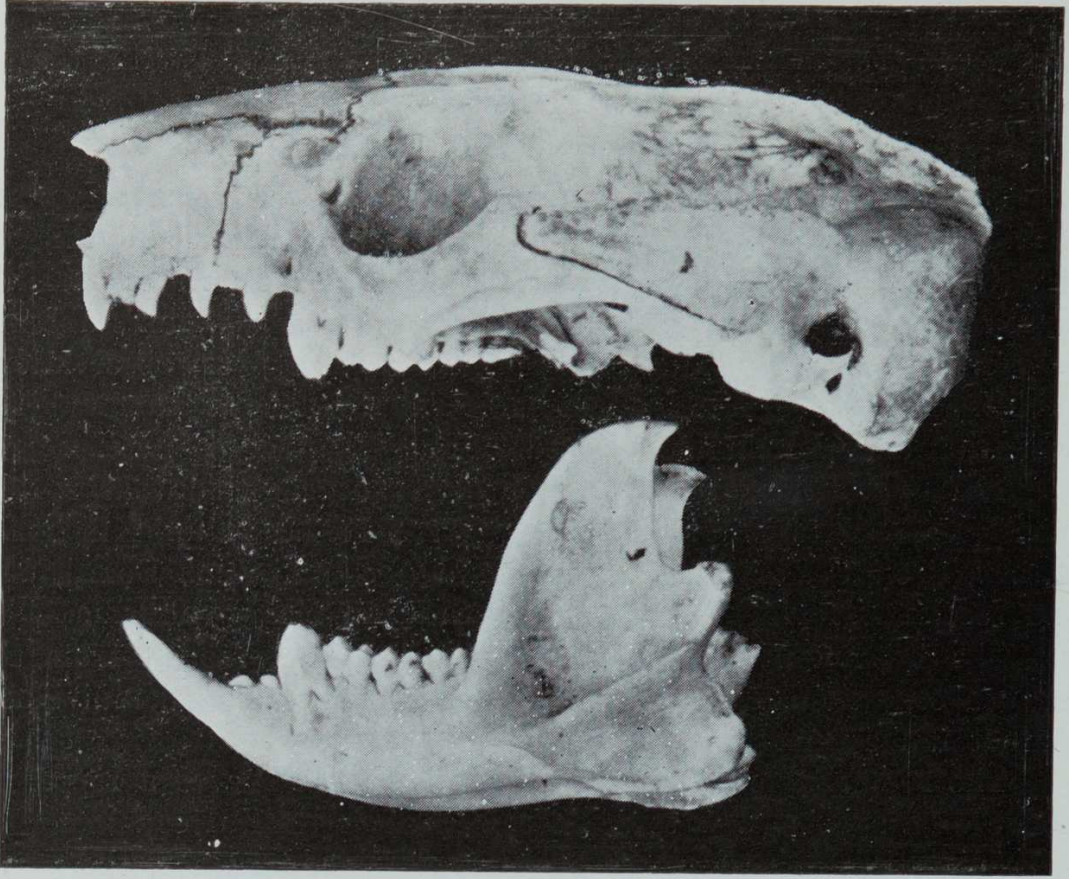


Fig. 1.—Lateral view of skull of *Wyulda squamicaudata*,
n. gen. et spec. (nat. size).

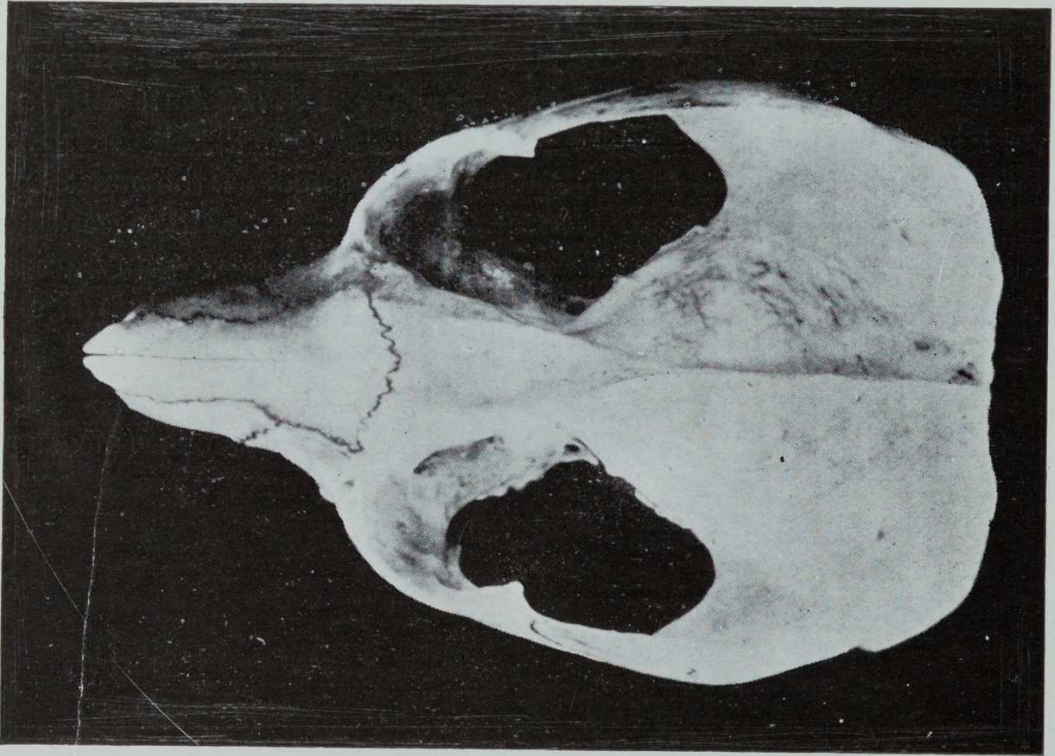


Fig. 2.—Dorsal view of skull of *Wyulda squamicaudata*,
n. gen. et spec. (nat. size).

Fur close, the hairs not so long or so frizzly as in *Trichosurus vulpecula*, not nearly so woolly as in *Phalanger maculatus* or *P. orientalis*. General colour above grizzled, owing to the fact that the shorter hairs are grey whilst the longer ones have black tips. On the upper surface of the limbs, especially the hind limbs, the fur is more sandy in colour. Throat and under parts yellowish; whitish on the sides. No discolouration on the chest. Hair on toes tawny. Ears smaller in proportion to the size of the animal than in *Trichosurus vulpecula*, but larger than in *Phalanger maculatus*, a little longer than broad, rounded at the tip, with a few hairs inside; externally with a thin covering of hairs. Flanks without a flying membrane. Rhinarium almost naked.

Fore-toes sub-equal, the fourth the longest, followed by 3, 5, 2, and 1. Claws short and stout. Palms and soles naked, the pads large, low, faintly striated, and not nearly so well defined as in *Trichosurus*. Hind foot typically syndactylous.

Tail strongly prehensile, covered with scanty hair for about one-seventh of its length at the proximal end, the remainder destitute of hair but covered throughout its length above and below by small thick, separate scales which do not overlap. These scales are roughly oval in shape, bluntly pointed posteriorly, dark brown on the proximal two-thirds of the scaly portion, yellowish on the distal third. The naked skin on which these scales are set is yellowish throughout.

Cranial characters.

The skull is relatively large for the size of the animal, and is strikingly broad posteriorly owing to the large size of the bullæ. The dimensions are as follows:—

Basal length—73 mm.

Greatest breadth—54 mm.

Nasals, length—29 mm.

„ greatest breadth—14.5 mm.

„ least breadth—10.3 mm.

Constriction, breadth—8.7 mm.

Palate, length—33 mm.

„ breadth outside m2—23 mm.

„ „ inside m2—15.2 mm.

Palatal foramen—5.5 mm.

Basi-cranial axis—24.5 mm.

Basi-facial axis—48.5 mm.

Facial index—198.

Teeth, horizontal length of p4—4.7 mm.

„ length of ms. 1-3—12.5 mm.

„ length of lower i1—12 mm.

The nasals are smoothly convex above and project forward to a level with the anterior point of the premaxillæ, hence the nasal notch is well marked. Interorbital region very narrow, concave

along its centre, its edges sharply ridged. The temporal ridges unite posteriorly and form a sharp crest. The posterior end of the jugal with a sharp ridge on its inner margin, terminating in a distinct point. Anterior palatine foramina running back to the level of the middle of the canines. Posterior palatine vacuities extending back from the middle of m2.

Teeth in several respects intermediate between those of *Trichosurus* and *Phalanger*.

Dentition I. $\frac{1.2.3.}{1. (2) (3)}$ C. $\frac{1.}{0.}$ P. $\frac{1.0.0.4.}{0.0. (3). 4.}$ M. $\frac{1.2.3.4.}{1.2.3.4.}$

Upper incisors very unequal, approximating in form to those of *Phalanger*. I1 nearly cylindrical; I2 only half the size of I1 with a narrow base and a broad cutting edge; I3 two-thirds the size of I1, as broad at the base as I2, but the cutting edge not so broad. Canine longer than I3 but not so long as I1, emerging from the bone at the premaxillo-maxillary suture, equidistant from I3 and P1. No sign of a third premolar; P1 functional but not quite as large as the canine; P4 very large, as long as I1, set very obliquely, its anterior end turned outwards, with a ridged cutting-edge. Molars quadricuspid, decreasing regularly in size from before backwards.

Lower anterior incisors large, curving upwards as in *Phalanger orientalis*, proportionately much larger and less flat than in *Trichosurus vulpecula*; I2 small, pointing directly forwards, its tip pressed against the base of I1. Another small tooth, possibly I3, nearly as large as I2, is present on the left-hand side, but doubtfully represented on the right, whilst there is another rudimentary tooth close to the base of P4 on the right-hand side, faintly represented on the left. P4 is obliquely placed and ridged, and with the molars similar in character to the corresponding teeth in the upper jaw.

The relationship of *Wyulda* to the genera *Phalanger* and *Trichosurus* may be summarised as follows:—

Character.	Phalanger.	Wyulda.	Trichosurus.
1. Order of length of toes	4, 3, 5, 2, 1	4, 3, 5, 2, 1	4, 3, 2, 5, 1
2. Pads on soles ...	Ill-defined	Ill-defined	Well-defined
3. Heels	Naked	Hairy	Hairy
4. Tail	Naked at tip	Naked at tip	Hairy to tip
5. Tail (naked part) ...	Smooth or granulated	Scaly	Smooth
6. Upper first incisor ...	Cylindrical	Intermediate	Flattened
7. Second incisor ...	Short and spreading	Short and spreading	Long and even
8. Third incisor	Very small	Moderate	Moderate
9. Space between I3 and C	None or small	Considerable	Considerable
10. Size of Canine ...	Large or medium	Fairly small	Small
11. Lower first incisor ...	Long and curving up	Long and curving up	Shorter and flatter

The genus *Phalanger* contains, according to the British Museum Catalogue, five species, though a considerable number of distinct insular species or sub-species have since been described. The genus *Trichosurus* contains only two closely related species. The genera

are separated by the fact that the tail is hairy to the tip in *Trichosurus* but naked at the tip in *Phalanger*, and by differences in the dentition. In the former character *Wyulda* agrees with *Phalanger*, though the tail is more naked than in any species of that genus. The curious scales on the naked part of the tail in *Wyulda* are undoubtedly homologous with the warty prominences met with in some individuals of several species of *Phalanger*. The fact that these warts are so variable in *Phalanger* suggests that they are disappearing and that the ancestral form was probably provided with scales similar to those of *Wyulda*. It seems just possible that the tail of *Wyulda* points to an ancestry from an animal like *Hypsiprymnodon*, that interesting connecting link between the *Macropodidae* and *Phalangeridae*, for in *Hypsiprymnodon* also the tail is covered with scales. These, however, are smooth and contiguous, very unlike those of *Wyulda* superficially.*

In the other feature in which *Trichosurus* differs from *Phalanger*, viz. the dentition, *Wyulda* is decidedly intermediate. In the two species of *Phalanger* whose skulls I have been able to examine, *P. maculatus* and *P. orientalis*, the incisors and canines differ very markedly from the same teeth in *Trichosurus*. In the latter genus the three incisors are not very different in length though the first is longest, and at their cutting edges they are approximately equal in breadth. The canine is usually rather shorter than the third incisor and separated from it by a diastemma as large or larger than that which separates it from the first premolar. In *Phalanger maculatus*, on the other hand, the three incisors are very different in size and form, the first being long and comparatively narrow, the second short but broad at the cutting edge, whilst the third is quite small and is almost crowded out between the second incisor and the canine. The latter is more than twice as long as the second and third premolars, and there is no diastemma between it and the third premolar. Taking these as the two extremes we find that the other species of *Phalanger* and *Wyulda* are all intermediate. In *Phalanger orientalis* the first incisor is little longer than the others. In *P. ornatus*, though the third incisor is small, the canine only touches it at its base. The latter tooth is small. In *P. ursinus* the third incisor is larger than the second and the canine is more or less separated from it and but slightly longer. In *P. celebensis*, though the third incisor is smaller than the second, the canine is separated from it by a distinct diastemma. In this species the canine is about as large as the first incisor and the first premolar. Finally, in *Wyulda* the third incisor is larger than the second, though not as large as the first, and the canine is about half-way between the third incisor and the first premolar and only a little longer than the former.

* I am indebted to Mr. J. A. Kershaw, Curator of the National Museum, Melbourne, for suggesting a comparison with *Hypsiprymnodon*, and for allowing me to examine specimens of *Phalanger*, *Trichosurus* and *Hypsiprymnodon* in the collection under his charge.

The differences in dentition alone would seem inadequate grounds on which to separate *Trichosurus* and *Wyulda* from *Phalanger*, in view of the considerable variation in the dentition of that genus. Probably the further differences in the tails will be regarded as sufficient justification for separation however. The separation of *Trichosurus* from *Phalanger* has been universally accepted since the publication of the British Museum Catalogue, and under these circumstances *Wyulda* must also be regarded as generically distinct. The alternative would be to regard these two genera as of sub-generic value only. Subgenera have been proposed for three of the other species of *Phalanger*, and if these were adopted the genus might be divided as follows:—

Genus Phalanger.

Subgenus Phalanger.

P. orientalis. Timor, Southern Moluccas, and New Guinea.

P. breviceps. New Britain and Solomon Islands.

P. ornatus. Northern Moluccas.

Subgenus Ceonyx.

P. ursinus. Celebes.

Subgenus Spilocuscus.

P. maculatus. Austro-Malayan Region from Saleyer (south of Celebes) to N. Queensland.

Subgenus Strigocuscus.

P. celebensis. Celebes.

Subgenus Wyulda.

P. squamicaudatus. N.W. Australia.

Subgenus Trichosurus.

P. vulpecula. Australia (except N. Queensland) and Tasmania.

P. caninus. S.E. Australia and Tasmania.

The writer suggests that some such arrangement as above would indicate the relationships of these forms to one another more satisfactorily than the existing system. In the lack of specimens of most of the species of *Phalanger* in Australian museums, however, it is impossible for him to follow this matter further, and until some worker with access to sufficient material reviews the group on the lines now accepted for northern mammals, the genus *Wyulda* will have to be maintained as distinct from both *Trichosurus* and *Phalanger*.

In conclusion, I desire to express my thanks to Prof. W. J. Dakin, D.Sc., for advice in regard to the examination of the animal; to Mr. J. A. Kershaw, F.E.S., for the loan of specimens for comparison; to Mr. G. Pitt Morison for his excellent coloured picture of the stuffed animal; and to Mr. J. S. Clark and Miss R. Sugden for the photographs of the skull.